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EXAMINER

TRINH, TAN H

ART UNIT

PAPER NUMBER

2618

DATE MAILED: 06/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/658,673

Applicant(s)

SUNDAR, RAJAGOPALAN

Examiner

TAN TRINH

Art Unit

2684

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 20-41 is/are rejected.
- 7) ☒ Claim(s) 18, 19, 42 and 43 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 10-03-2003 and 01-20-2004, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2, 5-13, 16-17, 20-21, 24-30 and 33-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Wiscombe (U.S. Patent No. 4618779).

Regarding claim 1, Wiscombe teaches a power system (see fig. 6) comprising: a plurality of power sources coupled in parallel (see fig. 6, power sources 1-N) to a first bus having a polarity (see fig. 6, positive (+) lines 13 and 15; col. 6, lines 47-54) and a second bus having an opposing polarity (see fig. 6, Negative (-) lines 14 and 16); a third bus (see fig. 6, (+) sense lines 17 and 19); and a plurality of sensing elements (see fig. 6, sensing elements RV1 and RV2), each sensing element in the plurality of sensing elements corresponding to one of the power sources in the plurality of power sources (see fig. 6, col. 7, lines 3-13), each sensing element coupled to the third bus (see fig. 6, sensing element (RV1) coupled to sense lines 17 (third bus) and sensing element (RV2) coupled to sense lines 19 of (third bus)), and configured to allow sensing of power demanded by a load (fig. 6, load 12) from the corresponding power source (see fig. 6, col.

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7, lines 2-25), and each power source configured to sense power demanded from it by the load (see fig. 6-7, col. 7, lines 14-33), and supply power to the load in response thereto (see fig. 6-7, col. 7, lines 34-40).

Regarding claim 20, Wiscombe teaches a method of delivering power to a load from a plurality of power sources coupled in parallel (see fig. 6) comprising: individually sensing at each of the power sources power demanded by a load (see fig. 6, sense lines 17 and 19 and load 12); and individually contributing power to the load from each of the power sources responsive to the power demand as sensed at the power source (see fig. 6, col. 6, lines 47-col. 7, lines 40).

Regarding claim 37, Wiscombe teaches a method of delivering power to a load from a plurality of power sources coupled in parallel (see fig. 6, power sources 1-N) to first and second busses (see fig. 6, first bus positive (+) lines 13 and 15, col. 6, lines 47-54 and a second bus Negative (-) lines 14 and 16), comprising: providing a power sensing element corresponding to each of the power sources and coupled to a third bus (see fig. 6, power sources 1-N and third bus (+) sense lines 17 and 19 and power sensing element RV1 and RV2); individually sensing power demanded by the load from each of the power sources (see fig. 6, sense line 17 for power supply 1 with load 12); individually deriving one or more control signals at each of the power sources responsive to the power demanded by the load from that power source (see fig. 6, col. 6, lines 47-col. 7, lines 2, and col. 8, lines 19-56) and individually contributing power from each power source responsive to the control signal corresponding to the power source (see col. 6, lines 47-

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col. 7, lines 40).

Regarding claims 2 and 21, Wiscombe teaches wherein at least one of the power sources in the plurality of power sources is a DC power source (see fig. 6, DC power supply 1).

Regarding claim 5, Wiscombe teaches wherein two or more of the power sources in the plurality of power sources have different power capacities (see col. 3, lines 31-56).

Regarding claim 6, Wiscombe teaches wherein at least one of the power sources is configured to contribute power to the third bus responsive to a signal derived from the corresponding sensing element (see fig. 6, col. 6, lines 47-col. 7, lines 2).

Regarding claim 7, Wiscombe teaches wherein at least one of the power sources regulates its power by means of a regulator circuit (see col. 2, lines 58-67), since the good voltage regulation is power by regulator circuit.

Regarding claims 8 and 26, Wiscombe teaches wherein at least one of the sensing elements is internal to its corresponding power source (see col. 2, lines 2-8).

Regarding claim 9, Wiscombe teaches wherein at least one of the sensing elements in the plurality of sensing elements comprises a resistor coupled between the third bus and either the

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first and second busses (see fig. 6, resistor RV1 or RV2 coupled between the third bus 17 and 19 and the first busses 13 and 15).

Regarding claim 9, Wiscombe teaches wherein a power source senses the power demanded from it by the load in the form of a common voltage drop between the third bus and either of the first and second busses, and the value of the resistance of its corresponding resistor (see fig. 5-6, col. 6, lines 47-col. 7, lines 59).

Regarding claim 11, Wiscombe teaches wherein the power source senses the common voltage drop from an arbitrary location between the third bus and either of the first and second busses (see fig. 6, common load 12, the power source senses the common voltage drop at common load on the third bus and either of the first and second bus, col. 7, lines 3-25).

Regarding claims 12 and 29, Wiscombe teaches wherein the resistor has a resistance which is inversely proportional to the power capacity of its corresponding power source (see col. 7, lines 63-col. 7, lines 13).

Regarding claims 13 and 30, Wiscombe teaches wherein at least one sensing element in the plurality of sensing elements provides an impedance between busses that is inversely proportional to a power capacity of the power source (see col. 7, lines 63-col. 7, lines 13), the power source corresponding to the at least one sensing element (see fig. 6, VR1 and VR2 and sense lines 17 and 19).

Regarding claims 16 and 25, Wiscombe teaches wherein each of the power sources has a power capacity and each of the sensing elements provides an impedance between busses that is inversely proportional to the power capacity of its corresponding power source (see col. 7, lines 63-col. 7, lines 13), whereby each sensing element senses power demanded by the load in proportion to the power capacity of its corresponding power source (see fig. 6-7, col. 7, lines 14-40).

Regarding claims 17 and 24, Wiscombe teaches wherein each power source supplies a portion of current demanded by the load such that a ratio of the power capacities of any two of the power sources is substantially equivalent to a ratio of the portions of load current supplied by the same two sources (see fig. 5, col. 5, lines 34-52).

Regarding claim 27, Wiscombe teaches wherein at least one of the current sensing elements comprises a resistor (see fig. 6, RV1 and RS1).

Regarding claim 28, Wiscombe teaches wherein the resistor enables sensing of current in the form of a common voltage drop (see fig. 6, col. 6, lines 57-col. 7, lines 2).

Regarding claims 33, 35-36 and 40-41, Wiscombe teaches wherein the sensing step further comprises sensing magnitude and phase of current demanded by the load (see fig. 5, col. 6, lines 34-46, col. 9, lines 10-29, and fig. 9, col. 8, lines 19-56).

Regarding claim 34, Wiscombe teaches further comprising regulating current contributed from at least one of the power sources responsive to a signal derived from the magnitude of current sensed at the at least one power source (see fig. 9, col. 8, lines 19-56).

Regarding claim 38, Wiscombe teaches individually sensing current demanded by the load from each of the power sources (see fig. 6 power supply1-N and load 12), wherein each of the power sensing elements comprises a current sensing element (see fig. 6, power sensing element RV1 and RV2 and col. 6, lines 47-col. 7, lines 40).

Regarding claim 39, Wiscombe teaches wherein the current from each of the power sources has a magnitude, and the sensing step comprises individually sensing the magnitude of the current demanded from each of the power sources (see col. 8, lines 34-39).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3 and 22, are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiscombe (U.S. Patent No. 4618779) in view of Pino (U.S. Pub No. 20020074232).

Regarding claims 3 and 22, Wiscombe teaches wherein the at least one DC power source. But Wiscombe fails to show a metal/air fuel cell.

However, Pino shows the metal/air fuel cell (see page 1, sections [0005-0006] and page 4, section [0029]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify above teaching of Wiscombe and by the providing of the teaching of Pino on metal/air fuel cell, in order provide user with longer life potentials and reliable of power source (see Pino page 1, section [0011]).

6. Claims 4 and 23, are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiscombe (U.S. Patent No. 4618779) in view of Tassitino (U.S. Pub. No. 20030016548).

Regarding claims 4 and 23, Wiscombe teaches the plurality of power sources. But Wiscombe fails to show the plurality of power sources is an AC power source.

However, Tassitino the plurality of power sources is an AC power source (see fig. 1, page 2, section [0015] and page 5, section [0038]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify above teaching of Wiscombe and by the providing of the teaching Tassitino on AC power supply in parallel-connected, in order to provide power to load at common node and controlling current transfer to the load base on an estimate of instantaneous power (see Tassitino page 2, section [0015]).

7. Claims 14 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiscombe (U.S. Patent No. 4618779) in view of Berson (U.S. Pub. No. 20020196004).

Regarding claims 14 and 31, Wiscombe teaches wherein the at least one sensing element. But fails to show an inductive current transducer.

However, Berson teaches an inductive current transducer (see fig. 2, inductive current transducer L1 42, page 5, section [0079]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify above teaching of Wiscombe and by the providing of the teaching of Berson on the inductive current transducer, in order to rectify and smooth the output (see Berson page 5, section [0079]).

Regarding claims 15 and 32, Wiscombe teaches wherein the at least one sensing element. But fails to show the Hall Effect current transducer.

However, Berson teaches the Hall Effect current transducer (see page 9, section [0111]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify above teaching of Wiscombe and by the providing of the teaching of Berson on Hall Effect current transducer, in order to measuring the current on the drain / source voltage V_{ds} of the FET through which current passes (see Berson page 9, section [0111]).

Allowable Subject Matter

8. Claims 18-19 and 42-43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Reasons for allowance

9. The following is an examiner's statement of reasons for allowance:

Regarding dependent claims 18 and 42, the reference of Berson teaches the current limiters to interrupt other selection current, However, the reference of Berson and the prior art of record fail to disclose or render obvious the wherein at least one power source of the plurality of power sources further comprises an interlock that interrupts current flow through the current sensing element corresponding to the at least one power source, responsive to a power failure of the at least one power source as cited in claims 18 and 42.

Conclusion

10. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(571) 273-8300, (for Technology Center 2600 only)

*Hand-delivered responses should be brought to the Customer Service Window (now located at the **Randolph Building, 401 Dulany Street, Alexandria, VA 22314**).*


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tan Trinh whose telephone number is (571) 272-7888. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiners supervisor, Anderson, Matthew D., can be reached at (571) 272-4177.

The fax phone number for the organization where this application or proceeding is assigned is **(571) 273-8300**.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the **Technology Center 2600 Customer Service Office** whose telephone number is **(703) 306-0377**.

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tan H. Trinh 
Division 2618
June 20, 2006

Anderson, Matthew D. (SPE 2618)

